Exp.8: Half-life of a Draining Water Column

|  |  |
| --- | --- |
| h (u) | t (sec) |
| 60.8 | 0 |
| 57.5 | 10 |
| 54.2 | 20 |
| 50.4 | 30 |
| 47.7 | 40 |
| 45.0 | 50 |
| 41.9 | 60 |
| 39.0 | 70 |
| 36.4 | 80 |
| 33.8 | 90 |
| 31.3 | 100 |
| 28.9 | 110 |
| 26.7 | 120 |
| 24.4 | 130 |
| 22.3 | 140 |
| 18.4 | 160 |
| 14.7 | 180 |

|  |
| --- |
| Points taken |
| ( 14,58 ) , (104,29) |
| ( 24,54 ) , (114,27) |
| ( 34,50 ) , (124,25) |
| ( 42,46 ) , (134,23) |
| ( 56,42 ) , (148,21) |
| ( 76,36 ) , (166,18) |

h (u)

**h (u)**

**t (sec)**

|  |  |
| --- | --- |
| ln h (u) | t (sec) |
| 4.1076 | 0 |
| 4.0518 | 10 |
| 3.9927 | 20 |
| 3.9199 | 30 |
| 3.8649 | 40 |
| 3.8066 | 50 |
| 3.7352 | 60 |
| 3.6635 | 70 |
| 3.5945 | 80 |
| 3.5204 | 90 |
| 3.4436 | 100 |
| 3.3638 | 110 |
| 3.2846 | 120 |
| 3.1945 | 130 |
| 3.1046 | 140 |
| 2.9123 | 160 |
| 2.6878 | 180 |

 Using the LINEST function excel to find the slop :

 **🡪** Slop = - 0.00764 $sec^{-1}$

 Or using points (150 , 3) , ( 46 , 3.8 ) :

* Slop = $\frac{∆y}{∆x}$ = $\frac{3.8 - 3}{46 - 150}$ = - 0.00769 $sec^{-1}$

**ln h (u)**

**t (sec)**